REMARKS

Final Office Action is Inappropriate in View of Newly Cited Art Kazar and Howard

Applicants have studied the Office Action dated March 7, 2005. Applicants respectfully request entry of these remarks under the provisions of 37 C.F.R. §1.116(a) in that the remarks below place the application and claims in condition for allowance, which allowance is respectfully requested. Claims 1-30 are pending. Reconsideration and allowance of the claims in view of the following remarks are respectfully requested.

In the Office Action, the Examiner:

(2-3) rejected claims 1-30 under 35 U.S.C. §102(e) as being anticipated by Kazar et al (U.S. Pub No. 2002/0112022) in view of Howard (U.S. Pub No. 2002/0078244).

As an initial matter, the Examiner made the Office Action final based on a new ground of rejection <u>not</u> stated in the earlier Office Action. Applicants respectfully traverse this decision. In the Final Office Action, the Examiner rejects the present claims by citing Kazar (US Pub. No. 2002/0112022) in view of Howard (US Pub. No. 2002/0078244). The Applicants respectfully point out that both the Kazar reference and the Howard reference were <u>not</u> cited in any of the previous Office Actions.

According to MPEP §706.07(a): "Under present practice, second or any subsequent actions on the merits shall be final, <u>except where the examiner introduces a new ground of rejection not necessitated by amendment of the application by applicant</u>, whether or not the prior art is already of record." In the previous Office Action dated August 20, 2004, the Examiner rejected claims 1-30 under 35 U.S.C. § 102(e) as being anticipated by Lewis et al. (U. S. Pub. No. 2002/0083037). In the previously-filed amendment, Applicants amended the independent claims for clarity and to include an additional limitations of "determining if an inode to be modified in the specified snapshot is an empty inode; copying, in response to determining the inode to be modified is an empty inode, metadata corresponding to the inode to be modified into the inode to be modified; and modifying the metadata copied into the inode to be modified." The

Applicants did not switch from one subject matter to another or resort to any subterfuge to keep the application pending.[1] Thus it is respectfully submitted that the final status of the Office Action is premature and should be withdrawn.

If the Examiner does not withdraw the final status of the Office Action, Applicants submit that this response does not raise new issues in the application. It is submitted that the present response places the application in condition for allowance or, at least, presents the application in better form for appeal. Entry of the present response is therefore respectfully requested.

Examiner Interview

The Applicants' representative, Jeffrey Giunta, would like to thank Examiner Ortiz for granting an informal telephonic interview of May 6, 2005, to discuss the application of the newly cited references to the pending claims. In this interview, the Applicants' representative and the Examiner discussed the interpretation of the newly cited references as applied to the rejection of claim 1. The Applicant's representative inquired as to the interpretation of the newly cited references and for an explanation of where those references taught some of the claimed subject matter. The Examiner indicated that some of the Examiner's notes were not available at the time of the interview and reference to those notes would be required for a complete explanation. The Examiner indicated that those notes would be reviewed and that the Examiner would subsequently contact the Applicants' representative. No agreement as to the patentability of claims was reached in this telephonic interview and the Examiner has not contacted the Applicants' representative with a further explanation regarding the interpretation of the cited prior art references.

(Page 2, para 1) Status of Claims

The Applicants respectfully traverse the Examiner's apparently erroneous statement of the status of claims in this application. The Applicants respectfully point

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[1] See MPEP §706.07.

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out that, as is consistent with the remainder of the Examiner's remarks, claims 1-30 are pending, and that the Applicants have not cancelled any claims in this application.

(Page 2, para 3) Rejection Under Kazar in view of Howard

As noted above, the Examiner rejected claims 1-30 under 35 U.S.C. § 102(e) as being anticipated by *Kazar et al*, U.S. Patent Pub. 2002/0112022 (hereinafter "Kazar") in view of Howard, U.S. Patent Pub. 2002/0078244 (hereinafter "Howard"). The Examiner cites 35 U.S.C. § 102(e) and a proper rejection requires that a <u>single reference teach</u> (i.e., identically describe) each and every element of the rejected claims.[2] The Applicants respectfully asset that a proper rejection based upon the combination of these references is under 35 U.S.C. §103. A proper rejection under 35 U.S.C. §103 expressly requires that obviousness or non-obviousness be determined for the claimed subject matter "as a whole," and the key to proper determination of the differences between the prior art and the present invention is giving full recognition to the invention "as a whole." The following remarks discuss differences between the cited prior art and the claimed invention and indictes that rejection of the pending claims is improper under either 35 U.S.C. § 102(e) or 35 U.S.C. § 103.

The Applicants respectfully traverse the Examiner's assertion in the last paragraph of page 2 and the first two paragraphs of page 3 of the Office Action dated March 7, 2005, that the Kazar reference teaches the following limitations of independent claim 1:

1) determining if an inode to be modified in the specified snapshot is an empty inode;

2) copying, in response to determining a inode to be modified is an empty inode, metadata corresponding to the inode to be modified Into the inode to be modified;

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[2] See MPEP §2131 (Emphasis Added) "A claim is anticipated only if <u>each and every element</u> as set forth in the claim is found, either expressly or inherently described, in a <u>single</u> prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). "The identical invention must be shown in as complete detail as is contained in the ... claim."

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3) writing the metatdata into a next oldest file system snapshot; and

4) modifying the metadata copied into the inode to be modified.

With regards to the limitations of "determining if an inode to be modified in the specified snapshot is an empty inode" and "copying, in response to determining the inode to be modified is an empty inode, metadata corresponding to the inode to be modified into the inode to be modified," the Applicants respectfully assert that in considering this claim "as a whole," the Kazar reference makes no mention of, and therefore does not teach or suggest, this combination of "determining" and "copying, in response to determining." With regards to the determining limitation, the Examiner cites paragraphs 82 and 84 of Kazar. Office Action Dated March 7, 2005, page 2, penultimate paragraph. These paragraphs discuss creating read-only replication of a volume and identifying differences between an existing replica and a new replica in order to propagate differences to a replica. Kazar, paragraphs 82 and 84. The Applicants assert that the Kazar reference does not teach or suggest "determining if an inode to be modified in the specified snapshot is an empty inode." As discussed below, the Applicants respectfully assert that the Kazar reference never discusses or includes a teaching of "empty inodes," especially in the context of the method set forth in claim 1 when considering that claim "as a whole." Further, the Applicants are unable to find any part of the Kazar reference that teaches, discusses, or suggests making any determinations regarding inodes in any snapshots. Therefore, the Kazar reference is not able to disclose "determining if an inode to be modified in the specified snapshot is an empty inode" as is set forth in claim 1. As this determining is not taught or suggest, the Kazar reference cannot teach "copying, in response to determining the inode to be modified is an empty inode."

With regards to "copying, in response to determining the inode to be modified is an empty inode...," the Examiner cites Figures 1 and 8-9 of Kazar, as well as paragraphs 20-21, 73 and 85. The Applicants are unable to find any discussion of "empty inodes" in these cited portions of the Kazar reference, or in any portion of the Kazar reference. As discussed above, "the inode to be modified" is specified within this claim as being "in the specified snapshot." The Applicants are unable to find any

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teaching in the Kazar reference that any "copying" is performed "in response to" any characteristic of an inode in a snapshot. The Kazar reference is completely silent on "copying" and simply does not suggest or teach "copying, in response to determining an inode to be modified is an empty inode" as is set forth in independent claim 1.

The Applicants are further unable to identify where the Kazar reference teaches "writing the metatdata into a next oldest file system snapshot." The Examiner cites Kazar, paragraph 69. Office Action dated March 7, 2005, page 3, first paragraph. The cited portion of Kazar describes clones of a data storage volume and states that "the clone itself is a read-only volume and can not be modified." Kazar, paragraph 69. Further, the cited portion of Kazar describes a clone of an active file system. The Applicants respectfully assert that the Kazar reference does not teach or suggest "writing the metadata into a next oldest file system snapshot" as is set forth by independent claim 1, since the snapshots of the Kazar system are not modified, thereby requiring "writing the metadata into a next oldest file system snapshot."

The Applicants respectfully assert that the "read-only" snapshots of Kazar are not compatible with "writing the metadata into a next oldest file system snapshot" and that modification of Kazar to operate with the presently claimed invention would lead to an inoperable system. If references taken in combination would produce a "seemingly inoperative device," such references have been held to teach away from the combination and thus cannot serve as predicates for a prima facie case of obviousness. In re Sponnoble, 405 F.2d 578, 587, 160 USPQ 237, 244 (CCPA 1969) (references teach away from combination if combination produces seemingly inoperative device); see also In re Gordon, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984) (inoperable modification teaches away).

The Applicants further assert that the Kazar teaching of "read-only" snapshots precludes a teaching of "modifying the metadata copied into the inode to be modified" as is asserted by the Examiner. Office Action dated March 7, 2005, page 3, second paragraph, citing Kazar, paragraph 55. The Applicants respectfully point out that the

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"inode to be modified" is specified in another limitation of this claim as being "in the specified snapshot. The Applicants point out that the cited portion of Kazar discusses renaming a file within the active file system, not within a snapshot. The Applicants point out that the cited portion of Kazar does not teach or suggest modifying a snapshot. The Applicants further assert that the above cited portion of Kazar *teaches away* from modifying data, including inode data, within a snapshot by stating that "the clone itself is a read-only volume and can not be modified." Kazar, paragraph 69. Where the prior art *points away* from the combination, modification or substitution of which is the premise of the PTO's alleged *prima facie* case of obviousness, there likewise is a built-in traversal of the rejection. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).[3]

With regards to the Howard reference, the Applicants respectfully traverse the Examiners assertions as to the teachings of the Howard reference. The Examiner states that the Howard reference teaches "accessing a specified file system snapshot in a plurality of file system snapshots, wherein the specified file system snapshot comprises at least one empty inode, wherein an empty inode indicates that metadata corresponding to the empty inode is contained in one of a more recent snapshot and a source file system." Office Action dated March 7, 2005, page 3, fourth paragraph. The Examiner cites Howard, paragraphs 7 and 24.

The Applicants respectfully assert that the Howard reference does not teach

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[3] The Federal Circuit held a reference did not render the claimed combination *prima facie* obvious because *inter alia*, the Examiner ignored material, claimed temperature limitations which were absent from the reference. See MPEP §2143.01 In *In re Fine*, the claims were directed to a system for detecting and measuring minute quantities on nitrogen compounds comprising a gas chromatograph, a converter which converts nitrogen compounds into nitric oxide by combustion, and a nitric oxide detector. The primary reference disclosed a system for monitoring sulfur compounds comprising a chromatograph, combustion means, and a detector, and the secondary reference taught nitric oxide detectors. The examiner and Board asserted that it would have been within the skill of the art to substitute one type of detector for another in the system of the primary reference, however the court found there was no support or explanation of this conclusion and reversed.

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"accessing a specified file system snapshot in a plurality of file system snapshots" as is asserted by the Examiner. The Applicants fail to see where Howard teaches or suggests "a plurality of file system snapshots" as is asserted by the Examiner. Howard reference discusses a "copy on write" protocol, but that protocol is only described in the context of updating a file in an active file system by performing modifications in temporary storage and atomically updating the active file system. Howard, Abstract and paragraph 20. The Applicants respectfully assert that the Howard reference does not contemplate any "snapshots" of the type specified in the context of independent claim 1 and that the Howard reference cannot teach "accessing a specified file system snapshot in a plurality of file system snapshots."

The Applicants further respectfully assert that the Howard reference does not teach or suggest "wherein an empty inode indicates that metadata corresponding to the empty inode is contained in one of a more recent snapshot and a source file system." The Examiner apparently cites paragraph 24 of Howard as a teaching that objects can contain zero bytes, and that files are objects, therefore files can contain zero bytes, and therefore a file can be empty. The Applicants respectfully assert a teaching of an empty file is not necessarily a teaching of an empty inode for a file. The Applicants respectfully assert that in a conventional file system, an empty inode cannot represent a file since there would be no file name or other data to even identify or refer to the file. The Applicants respectfully assert that a file in a conventional file system, such as is taught by Kazar and Howard, with an empty inode would not have any metadata associated with it. The Applicants respectfully assert that a "file" in a conventional file system with an empty inode would be essentially non-existent and that such a non-existent file is not consistent within the context of independent claim 1, when that claim is considered "as a whole." For example, this limitation explicitly recites that "an empty inode indicates that metadata corresponding to the empty inode is contained in one of a more recent snapshot and a source file system." This context precludes an empty inode in a conventional file system since metadata corresponding to the empty inode is contained elsewhere, and therefore exists.

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The Applicants further respectfully assert that the Howard reference does not explicitly teach an empty inode as having any useful purpose. The Applicants further respectfully assert that the Howard reference does not teach or suggest, either alone or in any combination with the Kazar reference or any other cited prior art reference, that an empty inode is used to indicate anything. The Applicants respectfully assert that any teaching or suggestion by Howard of an empty inode is at best inferential and that no specific use or purpose of any kind is taught or suggested by the Howard reference for such an empty inode. The Applicants therefore respectfully assert that the Howard reference cannot teach or suggest "an empty inode indicates that metadata corresponding to the empty inode is contained in one of a more recent snapshot and a source file system" as is claimed by independent claim 1.

The Applicants respectfully assert that independent claims 9 and 17 similarly distinguish over the Kazar and Howard references for at least the same reasons discussed above.

With further regards to independent claim 9, the Applicants respectfully traverse the Examiner's assertion that Kazar "teaches a system for modifying a file system snapshot." Office Action dated March 7, 2005, page 6, penultimate paragraph, citing Kazar, paragraph 100. The cited portion of Kazar teaches capturing a snapshot, and then using a read-only volume to contain that snapshot and thereby allow multiple users to access data within that snapshot. The Applicants respectfully assert that this is not a teaching of "modifying a file system snapshot" as is recited by independent claim 9.

With regards to independent claim 6, the Applicants respectfully traverse the Examiner's assertion that Kazar teaches "accessing a specified file system snapshot in a plurality of file system snapshots, wherein the specified file system snapshot comprises at least one inode comprising at least one ditto address, wherein the at least one ditto address refers to a data block that has a disk address in an inode associated with one of a more recent snapshot and a source file system." Office Action dated March 7, 2005, page 5, penultimate paragraph, citing Kazar paragraphs 68-69 and 71.

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The Applicants are unable to identify where Kazar teaches "wherein the at least one ditto address refers to a data block that has a disk address in an inode associated with one of a more recent snapshot and a source file system." The Applicants respectfully assert that the Kazar reference is completely silent as to any type of "ditto address" as is specified in independent claim 6 and further defined in the Applicants' specification at, for example, page 28, lines 16-24 and page 34, lines 4-26.

The Applicants further respectfully traverse the Examiner's assertion that the Kazar reference teaches "determining if a data block to be modified is referenced by a ditto address in an inode of the specified file system snapshot." Office Action dated March 7, 2005, page 5, last paragraph, citing Kazar, paragraph 68. The Cited portion of Kazar describes indirect blocks in a file system, but fails to teach any time of "determining" and in particular fails to teach "determining if a data block to be modified is referenced by a ditto address in an inode of the specified file system snapshot." Since this determining is not taught, the Applicants respectfully assert that Kazar cannot, and does not, teach doing anything in response to such determining, such as the recited claim limitation of "copying, in response to determining the data block to be modified is referenced by a ditto address in an inode of the specified file system snapshot, the data block to be modified into the specified snapshot."

The Applicants further assert that the other limitations of claim 6 regarding 1) copying the data block; and 2) modifying the data block, are not taught or suggested by the Kazar reference for reasons similar to those discussed above with regards to similar limitations of claim 1. Further, the Applicants respectfully assert that claim 14 and 22 similarly distinguish over the Kazar and Howard references for at least the same reasons as discussed for claim 6.

With regards to dependent claims 4, 12 and 20, the Applicants respectfully assert that the cited prior references fail to teach, as is recited for example by claim 4, the combination of:

copying a next metadata of the next most recent file system snapshot, wherein the next metadata includes any one of:

at least one shadow inode and at least one data block referenced by a disk address in a shadow inode; and

at least one shadow inode, and

writing the next metadata which have been copied to the specified file system snapshot.

As discussed above, the combination of Kazar and Howard does not teach "writing ... to the specified file system snapshot." Furthermore, the Kazar reference teaches away from writing to snapshots by stating that "the clone itself is a read-only volume and can not be modified." Kazar, paragraph 69.

With regards to independent claims 25 and 28, the Applicants respectfully assert that these claims distinguish over the cited prior art references for a least the same reasons as discussed above with regards to the similar limitations recited for claims 6 and 1, respectively.

Additionally, Applicants note that dependent claims 2-5, 7-8, 11-13, 15-16, 18-21, 23-24, 26-27 and 29-30 depend from independent claims 1, 6, 9, 14, 17 and 22, 25 and 28, respectively. As discussed above, independent claims 1, 6, 9, 14, 17 and 22, 25 and 28 distinguish over the cited prior art. Since dependent claims include all of the limitations of the independent claims from which they depend, Applicants further assert that dependent claims 2-5, 7-8, 11-13, 15-16, 18-21, 23-24, 26-27 and 29-30 also distinguish over the cited prior art as well. Therefore, Applicants respectfully assert that the Examiner's rejection under 35 U.S.C. §102(e), or more under 35 U.S.C. §103, over Kazar in view of Howard should be withdrawn.

CONCLUSION

Applicants acknowledge the continuing duty of candor and good faith to disclosure of information known to be material to the examination of this application. In accordance with 37 CFR § 1.56, all such information is dutifully made of record. The foreseeable equivalents of any territory surrendered by amendment is limited to the territory taught

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by the information of record. No other territory afforded by the doctrine of equivalents is knowingly surrendered and everything else is unforeseeable at the time of this amendment by the Applicants and their attorneys.
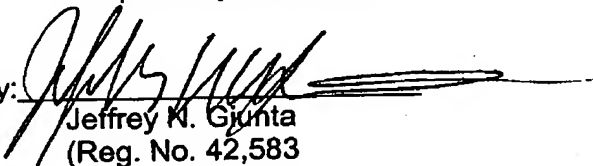
Applicants respectfully submit that all of the grounds for rejection stated in the Examiner's Office Action have been overcome, and that all claims in the application are allowable. No new matter has been added. It is believed that the application is now in condition for allowance, which allowance is respectfully requested.

PLEASE CALL the undersigned if that would expedite the prosecution of this application.

Respectfully Submitted,

Date: May 9, 2005

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